

are now 94 stations in operation, a new range having been commissioned at Nanaimo, B.C. Work is continuing on the establishment of additional radio ranges to serve the airports at Terrace, B.C., and Sudbury, Ont.

*Radio Beacons.*—These stations provide radio signals with which pilots may use their direction finding equipment to obtain relative directional bearings to assist in the navigation of their aircraft. Nineteen are now in operation, new ones having been established at Hope, B.C., Mill Bay, B.C., and Lloydminster, Sask. Radio beacons at Prince Albert and Embarras are equipped with radiotelephone facilities to provide communications to and from aircraft. Construction is proceeding of a beacon at Eon, Que., to replace the Mecantina radio range destroyed by fire in the summer of 1952. Additional radio beacons at Terrace, Kitimat, and Alert Bay in British Columbia, and at Beaverlodge, Sask., are in various stages of planning or construction. The beacon at Greata, B.C., was moved to Naramata, B.C.

*Fan Markers.*—These facilities, operating on very high frequencies, indicate to a pilot when he is directly overhead. Normally, they are placed on an airway to inform the pilot when he may safely lose altitude after passing high terrain or to indicate accurately the distance from an airport. Eleven of these stations are now in operation. The fan marker at Greata, B.C., was moved across Okanagan Lake to Naramata, B.C.

*Station Location Markers.*—These facilities are similar to fan markers except that the signal radiated is such that aircraft may receive the same indication irrespective of the direction of flight. They are installed at the same location as a radio range to enable a pilot to determine when he is exactly over the station, thus obtaining definite indication of position. Station location markers are installed at all radio range sites except Killaloe, Ont.

*Direction Finding Stations.*—A high frequency direction finding station for determining the bearing of aircraft from the station is in operation at Cape Harrison, Nfld.

*Instrument Landing Systems.*—Instrument Landing Systems provide radio signals which, when received by special radio equipment aboard aircraft, permit pilots to approach airports for landing during periods of very low visibility. An installation normally consists of a localizer transmitter providing lateral guidance to the runway, a glide path transmitter providing slope guidance to the approach end of the runway, two marker transmitters providing distance indications from the runway at approximately four and one-half miles and 3,500 ft. from the runway, and a low-power radio beacon (compass locator) to assist in holding procedures and lining up on the localizer course. The localizer and marker transmitters operate on very high frequencies, the glide path on ultra high frequencies and the compass locators on low and medium frequencies. Twenty-five instrument landing systems are now in operation, a new installation having been completed at Patricia Bay, B.C. The system under construction to serve Runway 26 at Patricia Bay airport has a localizer differing from those normally used in that it is highly directive, having only a front course, and is so controlled that clearance indication is shown only 10° on either side of the centre of the on-course signal.

*Aeronautical Communication Stations.*—To assist in providing the required communication between aircraft and the ground, 32 radio stations, operating for the most part on high frequencies, are located at strategic points across the country and into the Arctic. These stations provide communication to both domestic and